

# **Promoting safer and resilient construction practices**

Challenges and motivations in the Southeast of Haiti

## **Shelter and DRR Report for OFDA and Medair**



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Author: Amelia Rule  
Edited and reviewed by: Bill Flinn

Photo credit: Author

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## Acronyms and organizations

CRC	Canadian Red Cross
DRR	Disaster Risk Reduction
IFRC	International Federation of the Red Cross and Red Crescent
MTPTC	Ministry of Public Works, Transport and Communications (Haiti)
OFDA	Office of U.S Foreign Disaster Assistance
RCRC	Red Cross and Red Crescent Movement
UN Habitat	United Nations Human Settlements Programme

Build Change – Building Disaster Resilient Buildings

GOAL

Group URD - Groupe d'Urgence Rehabilitation Developpement

Habitat for Humanity

Planète Urgence (PU)

Save the Children

Swiss Solidarity

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## Executive Summary

As recurring natural disasters continue to compound vulnerability in those already in poverty it is vitally important that the humanitarian sector ensures Disaster Risk Reduction (DRR) is built into the reconstruction processes integrating DRR measures into all shelter recovery and reconstruction programmes following disasters. The challenge of changing construction practices and the related behavior of a population however is a substantial task. Challenged by social norms, trends, cultural and economic factors, raising awareness or disseminating information does not necessarily result in the adoption of the 'best' practices advocated.

Research to date points out there could be numerous factors that influence a population or an individual's decisions concerning their housing practices. In addition to perceptions of risk and financial constraints (especially relevant for Haiti) there can be **historic, cultural and religious** elements to take into account. The IFRC World Disasters Report claims that **culture and belief** are often not adequately accounted for in DRR programming and that DRR practitioners too often assume that people will think and act on their vulnerability in a rational or scientific way, or will follow the same analytical process as the international actors themselves. The shelter and DRR community of practice should **challenge the assumption** that knowledge and understanding of risks is motivation enough to outweigh culture or livelihood imperatives. (IFRC, 2014)

This report presents the finding of one month's study into the reasons behind disaster-affected communities' ability or inability and motivations to upgrade transitional shelters or improve existing housing. Identifying *the triggers and barriers* affecting people's decisions to upgrade or build more safely and resiliently is the key first step to gaining a

deeper understanding of this topic. Investigating Medair's OFDA and Swiss Solidarity-funded projects in the southeast as concrete examples, the report then explores how the findings can inform humanitarian shelter and reconstruction interventions in the future. This second section considers how to transform local construction practices and habits through DRR activities and make sure that these behavioral change activities are incorporated into future shelter and reconstruction programmes at a global level.

Focusing on rural and peri-urban areas, the report found that increasing the awareness of best construction practice and communicating the importance of shelter safety provided **one step** towards an **increased understanding of better practice**; however, this awareness did not necessarily lead directly to the adoption and implementation of these practices. Behavioral change concerns the way people construct their homes and involves the alignment of many factors. The research identified the following main topics that impacted on decision-making, each with linking triggers and barriers to take into account:

- Knowledge leading to motivation
- Capacity
- Access to resources
- The absence of other priorities

These factors are closely in line with other decision-making processes that usually take into account trade-offs between motivation, mandate, capacity and funding. Within the identified factors there were integral challenges and motivations that influenced decision-making.

Additionally, the adoption of more resilient construction methods also depended on the initial status of the

beneficiary family; their capacities, their type of home (traditional house, transitional shelter - T-Shelter - or family plot) coupled with the types of triggers and barriers they faced in upgrading their house or shelter. This level of changes in construction practices stemmed from decisions made by the family or community to adapt their habits – these decisions may be triggered by a large external factor such as a storm, or a change at household level such as an input of credit that removes financial barriers to construction activities. Some household level triggers and barriers cannot easily be influenced by humanitarian organizations, and conceivably could be beyond their permissible remit. To further add to the complexity, household level factors are often impacted by wider environmental, economic or institutional constraints.

Evidence of people starting to adapt their practices to better construction principles was observed throughout the Southeast through a range of different examples. These included the full reconstruction of houses using improved methods, as well as the upgrading of existing house structures. Upgrading, for the purpose of the report was qualified as; solidifying a shelter that was temporary or transitional, reinforcing an existing house through strengthening improvements, or making changes such as adding hurricane strapping to a roof.

The example of the shelter programme, trainings and community awareness activities of Medair in the Jacmel commune offered a scenario to explore the extent to which safer construction practices had been used in the area following DRR and safer shelter promotion through Medair and other agencies. Through investigating the upgrading of T-Shelters and sensitization activities it was possible to answer research question one exploring examples of the social, economic and cultural triggers and barriers to changes in

construction practices. Within the specific context of Medair's projects these factors were considered as the main challenges and motivation to building more resiliently:

### Challenges

1. Resources: cost and availability of materials and labor
2. Alternative priorities exist to that of shelter upgrading
3. Families have other shelter options
4. Lack of skills/expertise/knowledge in households to carry out changes

### Motivations

1. Injections of cash from diaspora or through a loan
2. Availability of affordable labor and knowledge
3. Security and safety concerns
4. Encouragement from NGO staff /CASECS/trainings
5. Quality and/or suitability of the T-Shelter need improving

The findings also show that, factors such as beneficiary communication and the suitability of the promoted technical approaches played an equally important role as access to finance or fear of future disasters.

Subsequently question two explores how humanitarian actors working in Shelter and DRR can better orient their programmes to increase the chance of improvements in construction methods and adoption of better DRR measures as a result of their activities.

For humanitarian actors responding to DRR and Shelter needs, the following key findings from the study should be taken into consideration when planning and designing programmatic responses:

- Encourage a more comprehensive understanding of the context in the form of a diagnosis and analysis which is reiterated and updated at strategic

points throughout the lifetime of a programme.

- Develop a flexible and nuanced approach to programming allowing the design of project activities that respond to the individual needs of communities as they change over time.
- Ensure projects are timely and linked to present needs by being able to look forward and have an understanding of changing trends. Finally, there should be a clear strategic connection between beneficiaries' experiences, DRR messaging and trainings to support the individual recovery choices made by the affected populations.

In conclusion, it is important for humanitarian actors to examine their own role in supporting and informing beneficiary choice. The beneficiaries and the humanitarian community do not necessarily share the same motivations. While the former may be encouraged by an injection of cash from the diaspora or an addition to the family, the latter is interested in leaving a legacy of safer and more durable buildings. Between families, communities and agencies, there are different understandings of acceptable risk and perceived priorities. Livelihoods and education were voiced as higher priorities than investing scarce resources into upgrading a transitional shelter. Adherence to supporting families in their own decisions on recovery and development should be championed as key to successful programming in shelter, recovery and DRR programmes.



Photo 1: Transformed T-Shelter in La Montagne using Medair's promoted methods. Credit: Author



Photo 2: Damaged and deserted traditional construction in La Montagne. Credit: Author



## 1.0 Introduction

### Purpose of the research

USAID/OFDA has commissioned this research to identify the barriers and triggers to rural homeowners choosing to build safer, more disaster resistant houses in order to inform their future programming. The purpose of this report is to analyze Medair shelter programs implemented in the southeast of Haiti since the 2010 earthquake to answer the following questions:

**A) What are the factors, which act as barriers or as triggers to the utilization of safer building principles by households or homeowners in the construction of houses in rural communities in the southeast department of Haiti?**

**B) What are the programmatic approaches that could mitigate or capitalize on the factors, which act as barriers or as triggers respectively to increase the utilization of safer building principles?**

Previous OFDA-funded initiatives have found that while the availability of skilled labor has increased in communities and despite awareness campaigns, homeowners still do not choose to utilize safer building principles when constructing houses (Terms of Reference, 2014). In order to answer the primary and secondary research questions, it was envisaged that the following areas of investigation could be pursued:

1. Verification of the premise that safer building principles are not being widely used in the construction of houses in Haiti.
2. The potential for financial savings. What, if any, are the financial savings if houses are built with safer building principles?

3. Perception of risk. What do people perceive as their level of risk to different types of disasters?

4. Positive deviants. What factors are present among the positive deviants, i.e. people who have already used their own funds to construct their houses more safely?

5. The incremental approach. How does the incremental approach to construction impact decisions on material usage and design?

6. The role of local builders. What is the role of local builders in the design/construction process?

7. Effective communication channels. What communication channels or methods of information dissemination might be the most effective? Who are the potential change agents at the community level (leaders, builders, trend-setters)? (ToR, 2014)

The assumptions above formed the starting point for the literature review and field research. In the web of institutionalization diagram (Annex 8.6) the route of affecting change at institutional level, is shown by basing actions on the experiences of communities. This was the basis for the research approach for the study.

The decision-making factors that trigger a change in construction practice or impede these improvements are specific to a given context and location. An exploration into why people have decided to improve their houses and the factors that hinder people taking action to make changes can help humanitarian actors understand how to best support families in their housing decisions. In answering the research question concerning triggers and barriers, it was important to firstly clarify the

building principles being promoted in the Southeast of Haiti, the methods of communication and dissemination of these messages and identify the possible shelter examples that may or may not show evidence of these practices having been adopted. The wording of the research question also needed to be qualified. Triggers are seen as a sudden event that results in a different outcome. For a change in housing status multiple reasons can affect decisions to improve or upgrade a home, and these factors may build up over time rather than suddenly, resulting in a slower response over time. The wording *motivation and challenges* are therefore used to clarify this aspect of the research. This study investigates the on-going projects that Medair is implementing and reflects on past project activities as part of the research process.

### 1.1 Medair's presence in Haiti

OFDA, through partnership with Medair have supplied 2,477 transitional shelters in the commune of Jacmel and provided core structure distributions in Côtes-de-Fer following Hurricane Sandy, 2012. Medair have additionally implemented permanent housing construction in Côtes-de-Fer with Swiss Solidarity. Since 2010 Medair have therefore carried out the distribution of Worldwide Shelters steel-framed 'transitional tents', supported reconstruction in the form of extensive repairs to traditional housing, built permanent housing, constructed timber framed T-Shelters with local labor and continued support in the upgrading of selected shelters into permanent structures (refer to Annex 8.9 for a programme summary).

Of the first OFDA funded T-Shelters that were implemented in Jacmel and La Montagne 1,763 remain in the original state on handover clad in USAID tarpaulins. There is still a 90% occupation or 'use' rate of these T-Shelters that

remain in their original tarpaulin-wrapped state, yet a low rate of permanent upgrading. Around 600 upgrades have been successfully achieved through partnerships between the owners and Medair, where families contribute a portion of materials and labor to the process. There have also been a series of mason trainings supported by Swiss Solidarity and UN Habitat. The on-going Medair programmes in the Jacmel commune build on these experiences to address this low level of transformation as well as encouraging best practice to become more integrated in the construction habits of the vulnerable communities.

#### Map 1

Location of interventions in the Southeast



Due to the on-going presence and the phasing of projects Medair has a good understanding of shelter challenges in the Southeast and a high visibility within the different commune sections. With high visibility also comes a reputation for being committed to the area, this is demonstrated in their support to T-Shelter beneficiaries through upgrades for mainly the most vulnerable members of the community and additionally parallel activities through WASH projects which provide water reservoirs for collecting roof rainwater and toilets.



### 1.1.2 Current Activities

Medair delivered 2,477 wood-frame transitional shelters in the emergency phase, with a lifespan of at least 3 years without upgrading. Four years after the earthquake, only a few of the vulnerable people who benefitted from a transitional shelter have been able to upgrade their shelters to a permanent home. Due to their socio-economic situation families have had to prioritize food and health expenses over upgrading their shelters.

The current Medair project concerns 'Disaster Resilient Construction Training and Owner-Driven Upgrades of Transitional Shelters'. This project builds on the implementation of T-Shelters in 2010 and 2011 and the on-going training which promotes reinforced traditional construction techniques to upgrading, by providing additional technical training and PASSA (Participatory Approach to Safe Shelter Awareness) activities in further communities in La Montagne and Bas Cap Rouge.

The safer building principles that are used in the projects to raise community awareness derive from principles first developed by Medair for awareness-raising sessions and training during its shelter project after the Padang earthquake in Indonesia, 2009, and then contextualized for Haiti the illustrations are drawn from the technical section of IFRC's PASSA Guidelines - 'Shelter Safety Handbook'. These principles are used for community messaging through posters that support the PASSA activities. A more detailed training package for masons and carpenters builds on these principles to demonstrate how they can be implemented, and form the basis of the practical training given through seminars and the construction of a model house.

The technical trainings involve the construction of new houses as well as training on upgrading T-Shelters. The new houses will be built for identified

vulnerable families in the area of intervention. The construction approach embraces traditional methods of stone and cement with integrated timber bracing. The current project activities were based on the results of a study into the use of the T-Shelters three to four years after their installation (Table 1).

As explained, out of the total 2,477 transitional shelters built in the first project, 29% have been upgraded. However, of these 714 shelters, only 6% or 43 shelters were upgraded by beneficiary families; the remaining 94% were upgraded with support from NGOs (Medair and Planète Urgence).

These figures gave rise to the question: What are the factors impacting on a family's abilities or desire to upgrade? This question is a key area of investigation within the wider scope of the adoption of better construction principles.

Table 1: Transitional Shelter Survey Overview

<b>General Overview</b>		
Originally constructed	2,477	Total
Upgraded T-shelters	714	29%
by NGOs	671	94%
by Beneficiary families	43	6%
Remaining T-shelters	1,763	71%
<b>Remaining shelters occupied by families</b>	1,613	91%
Remaining shelters no longer occupied by families	125	7%
Remaining shelters with no information found	25	1%

(Medair Project Proposal 2013 - HTI 115)

## 2.0 Research Approach

### Location of fieldwork

The Jacmel commune in the Southeast of Haiti, including La Montagne and Bas Cap Rouge, was chosen for the area of investigation (Map 2). Comparative research was also carried out in Côtes-de-Fer (Map 1). Carrying out structured research in the Southeast provided an opportunity to look in-depth at the context-specific challenges presented in Haiti and how their identification may enable the wider sector to inform the diagnosis and planning of post-disaster Shelter and DRR and in other areas at risk.

### 2.1. Methodology

The research methodology was developed through consultation with Medair and OFDA and was undertaken in two stages. The first stage was a desk-based literature review to identify the existing theories relating to behavior change and linked to DRR and construction practices (Section 3). The second stage of the research was a period of fieldwork undertaken in October 2014 to collect primary qualitative data. The information collected in Haiti was analyzed and cross-referenced with the

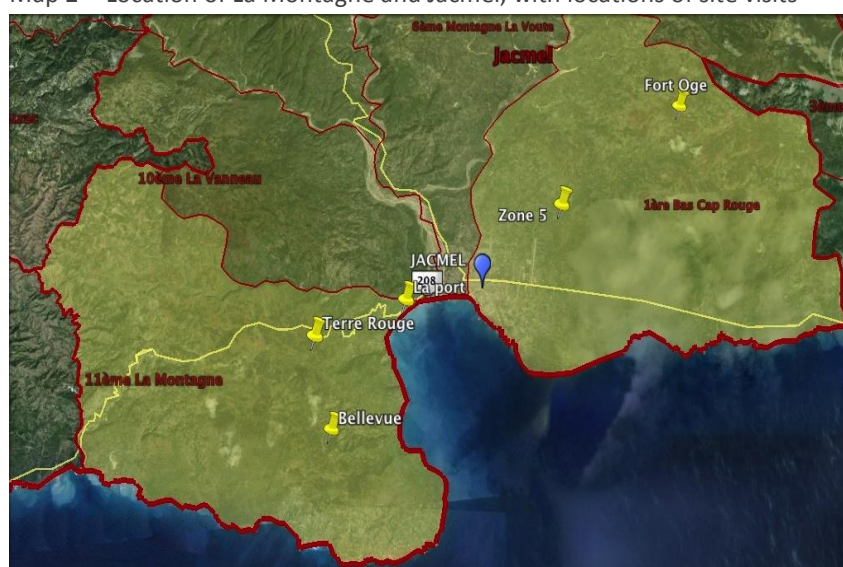
literature review and the existing assumptions from the ToR to draw conclusions based on theory and practice to answer the research questions (Sections 4 and 5).

The fieldwork research activities were drawn from community DRR tools such as PASSA used by the RCRC and Habitat for Humanity. Specific research tools used were all qualitative in nature, including:

- Key informant interviews with NGO stakeholders,
- Key informant interviews with masons,
- In-depth household interviews,
- Observation; and
- Participatory community-based activities

Triangulating information from other Medair sector activities such as water, sanitation and hygiene promotion (WASH) and Livelihoods, as well as from other local stakeholders, such as NGO's and those working in the construction industry, was a core activity of the research revealing the wider dynamics involved in construction practices. See Box 1 for further detail about research tools used during the fieldwork.

Map 2 Location of La Montagne and Jacmel, with locations of site visits



## Box 1: Fieldwork Research Tools

### Key informant interviews

The interviews provided an opportunity to engage with Medair field staff and benefit from their extensive local knowledge of the region. They took place with a range of staff members including; Medair's community mobilisers working in Côtes-de-Fer and Jacmel, the Project Manager for WASH and Shelter in Jacmel, the Country Director of Medair, research staff, engineers implementing PASSA in La Montagne and Forte Ogé as well as shelter staff in charge of the training module and model house construction. Other stakeholder interviews outside of Medair included, UN Habitat, GOAL, French Red Cross, Build Change, Swiss Development Cooperation, Planète Urgence, Save the Children and Canadian Red Cross (CRC).

Household Interviews: In total 20 household interviews were undertaken

The household interviews were held with the head of the household or the family member responsible for the house construction or main livelihood activities. A series of questions was developed to lead the conversations but was not conceived to collect quantitative data. The questions and the table of interviews can be found in Annex 8.3.

Community-wide participatory meetings

Group activities used PASSA as a base and were then adapted to the context and the themes of the research questions. Although PASSA is primarily a DRR and Planning tool, it offered techniques for working with the community to identify their main concerns and priorities, and therefore provided an additional method of analysing triggers and barriers to safe construction at community and household level. At the time of research, Medair had successfully started the full PASSA process in three different communities alongside the technical training and model house construction. Communities took part in activities such as historical mapping; transect walks and discussing everyday threats as well as exploring their priorities and challenges through a seasonal calendar.

Focus groups

In addition to individual household interviews and community meetings, a smaller focus group took place in La Montagne on the specific topic of 'Changing practices in house construction'. La Montagne is placed between the peri-urban areas and higher rural areas, making it an ideal location for looking at changing practices. This focus group included a range of people from the community such as:

- People who have rebuilt since the earthquake, using improved construction methods
- People who rebuilt using existing or pre-earthquake methods
- People who have upgraded incrementally using an intervention by Medair
- People of varying tenure status– tenants, owners, land occupiers
- People who work in construction: skilled (Boss Mason) and unskilled labour

Mason interviews: In total 10 masons were interviewed

In each of the three main communities a mason who had received the technical training was interviewed in depth to gain an understanding of what were the challenges faced and opportunities presented when putting into practice the skills they had acquired. Further interviews with those mason recently trained also provided an opportunity to explore the motivations and concerns of the mason's clients, their willingness to invest in more durable building techniques and explore the topic of supply and demand.

Observation (as a tool)

The continued observations of the consultant and the dedicated research staff including a translator, a community mobiliser and drivers provided further background cultural comprehension to this study. Informal observations in the villages and settlements visited made while on transect walks or driving across the Southeast were a valuable contribution to framing the examples and stories given to us through the in-depth interviews and focus groups.

With the starting point of behavioral change theories and the identified challenges of influencing embedded practices, this research used participatory and holistic approaches to collecting data for analysis that offered a qualitative knowledge base for learning and identifying triggers and barriers at multiple scales.

During the field research, two types of questionnaires were developed to guide the conversation, allowing an unstructured interview of house owners. These questions firstly allowed an in-depth discussion with those people who were living in T-Shelters who had not yet upgraded from the tarpaulin envelope, exploring the reasons why they remained in a transitional status. Additional questions allowed an understanding of why and how some families had made improvements to their homes within the last year, either through repairs or reconstruction within an existing house or the upgrading of a T-Shelter.

Through observation of any new construction, it was possible to see whether or not people had chosen to use the safer building principles. From this it was possible to interview people about their choices and any factors that had influenced their choices. For people still in T-Shelters the interviews aimed to understand why they had not yet transitioned to a permanent house (repaired or rebuilt) or upgraded the T-Shelter with more permanent materials.

Household interviews were carried out with T-Shelter beneficiaries, as well as non-Medair beneficiaries involved in reconstruction or those unable to make shelter improvements at the time of the study.

#### Research Limitations

The fieldwork took place in October and November of 2014 and allowed 21 days in country. The research team consisted of

the consultant, a translator and a community mobiliser. Despite distances and road conditions the majority of the time (13 days) was spent in the field.

The timing of the consultancy fell within the hurricane season and outside of the traditional time for housing repairs or construction activities (December). Despite it historically being rainy season in Haiti, 2014 has seen a severe drought in the Southeast, and this has significantly affected people's financial capacity for construction work. Despite the timing of the consultancy there were examples of owner-driven upgrades and new construction or repairs to visit that had taken place earlier in the year.

## 2.2 Context - Haiti, The Southeast

The Southeast department of Haiti comprises a range of different geographic and settlement typologies. Jacmel, one of the main towns, has a population of around 40,000 people, and is located in the Bas Cap Rouge section of the department. Due to the higher mountain ranges in the Southeast region, settlements manifest as small urban centers, peri-urban sprawl, rural low land villages or more remote rural highland villages.

In the peri-urban areas there is a clear increase in development through the connections with Jacmel and improved infrastructure. In the rural areas people traditionally live in stone or wooden housing and work in rural agricultural jobs, or commute to the nearest town. Trades such as carpentry and construction and selling small snacks, groceries, fruits and vegetables are the most common; these trades rely heavily on access to local materials and goods.

Traditionally families in the rural provinces previously lived in a 'lakou', a group of houses arranged around a communal open space which allowed for

activities such as child care to be done collectively. With the pressure on land over recent decades this tradition has adapted towards the typology of a single-family house with several out houses on the plots, referred to as 'abityasyon' from the word 'habitation'. In peri-urban areas it is less likely for one family to have multiple buildings; this therefore increases the impact on a family if that one structure is damaged.

#### Threat of Earthquakes and Cyclones

The Southeast was severely impacted during the earthquake of 2010 (See Map 3), but more significant is the repeated exposure it has had to hurricanes. Communities in La Montagne and Cote de Fer and Bas Cap Rouge still share in the collective memory of the impacts of hurricanes in the 1960's 1980's and early 2000's as having devastating effects on houses, trees, livestock and agriculture, causing landslides, and severe flooding. Hurricane Sandy in 2012 further compounded the weaknesses and vulnerability in the area that were a result of the earthquake. The seasonal hurricanes have impacted on the already diminishing amount of trees, and contribute to the existing lumber shortages and wide deforestation. These shortages directly affect the construction industry as until recent years house construction has relied heavily on Haitian

woods such as Haitian Oak and Acajou for structural and cladding elements.

#### Government Activities

Following the earthquake, the central government decided to step back from the replacement of lost housing stock, and provision of new dwellings for families that were homeless prior to the earthquake; the National Housing Policy document states that "[t]he role of the state is above all to support families and the private sector to allow them to build affordable, safe and quality homes" (in Richner/URD, 2013).

This market led approach to housing, allows self-build construction to be the primary type of reconstruction and is supported by the publication of guidelines from the Haitian Ministry of Public Works (MTPTC). These include guidelines on repairing and reconstruction in confined masonry but there are not yet government-backed guidelines that offer information on more traditional construction methods (MTPTC, Reconstruction Guidelines).

However UN Habitat, CRAterre, The Swiss Agency for Development and Cooperation (SDC) and Aecid are presently working on construction guidelines based on their traditional house construction trainings entitled 'Kisa Ki Fe Yon Kay Byen Solid' (What makes a strong house).

Map 3 Shows the 2010 Earthquakes' intensity





### 3.0 Literature Review and Theoretical Approach

The research subject opens up a discussion on changes in practice. There is an opportunity for humanitarian actors to use emergency or recovery funding in a way that supports long-term resilience to the impacts of a disaster. To consider how best to support longer-term changes, it is useful to look at development practice and theories; how can development theories help in the analysis of triggers and barriers? In developing a research approach, this study reflected on theories such as Theory of Change and diagnosis and planning approaches practiced in the Development Planning Unit at UCL (DPU), as well as theories around Behavioral Change in societies discussed at the Behavioural Change Centre (also at UCL).

#### 3.1 Behavioral Change

Advocacy and campaigns for a change in social practices are often based on presenting the worst-case scenario that could result if the advice is not followed. These methods often play on the fear of those targeted. On occasion, using the 'fear factor' can sometimes provoke the opposite to the desired effect, increasing the likelihood that people will act intrinsically, concerning themselves, the individual, rather than extrinsically, concerning the wider community or population. (Monbiot, 2014/ Uzzell, unknown)

DRR and safe construction concerns actions for which both individuals as well as the wider community need to take responsibility. Therefore focusing on the positive gains of DRR measures is an important element of working towards safer construction practices. However, behavioral change through campaigning and promoting positive gains assumes that people make changes based on the

weighing-up of costs and benefits, which is only one factor to consider.

This research attempts to understand the types of positive action and methods of communicating that were successful or unsuccessful in leading to transformation in the given context.

#### 3.2 Seismic Adjustment

Academics use the term 'Seismic Adjustment Behaviours' to describe behavioral change in relation to the long-term protective actions undertaken by households in anticipation of an earthquake. Studies over the last 40 years have shown 'that the majority of people at risk from earthquakes do little or nothing to reduce their vulnerability' (Solberg, et al. 2010:1663). Despite the mantra "earthquakes do not kill people, buildings do", Solberg et al. highlight that the buildings are the result of a range of decisions made by the people that construct and inhabit them. As with any decision-making process a multitude of factors are taken into account consciously or unconsciously, including issues of social standing, gender, race, class, cultural norms, values and beliefs (ibid).

Past psychological studies in earthquake zones into key areas of risk perception show that the perception of risk is not a sufficient condition to induce adjustment behavior. In *Cities at Risk*, (Joffe et al. in press) the authors discuss the challenges of relying on past experiences to inform risk perceptions, often to the exclusion of potential risks not yet experienced.

The awareness of future risks is often tied to the reliability of warnings or predictions of imminent risk. Often choices are made depending on perceived level of risk: is information available on



the likelihood of an earthquake occurring sooner rather than later? Seismic adjustment at household level is also affected by personal experiences, levels of optimism and acceptance of fate. Demographic factors, gender, race and social standing also shape perception of risk and the likelihood of change in

behavior as a result. External factors are also key influencers; change can be a result of society's adoption of norms that are communicated by the media, government and other actors in people's social environments. (Solberg et al. 210 1674)

Photo 4: Example of Traditional Housing Construction in La Montagne, showing access to elevated storage area and multiple entrances/exits to the house. Credit: Author



## 4.0 Triggers and Barriers to Safer Construction

**Question 1) What are the factors which act as barriers or as triggers to the utilization of safer building principles by households or home-owners in the construction of houses in rural communities in the Southeast department of Haiti?**

### 4.1 Findings

The specific challenges and barriers to the adoption of safer building practices were found to fall within **4 key factors** that influenced decision making;

- **Knowledge leading to motivation**
- **Capacity**
- **Access to resources**
- **The absence of other priorities**

Without the **knowledge** that housing could be or should be improved there is no catalyst for change. Without the **capacity or resources**, however, the change will not take place. If the capacity and resources are available then the change may happen as long as there are no other pressing **priorities** to address. Each factor included **challenges and barriers**:

#### Challenges

1. Resources: cost and availability of materials and labor
2. Alternative priorities exist to that of shelter upgrading - livelihoods
3. Families have alternative shelter options
4. Lack of skills/expertise/knowledge in households to carry out changes

#### Motivations

1. Injections of cash from diaspora or through a loan
2. Availability of affordable labor and knowledge
3. Security concerns for their shelter

4. Encouragement from NGO staff /CASECS/trainings
5. Quality and/or suitability of the T-Shelter need improving

### 4.2 Summary

Across the range of housing solutions the main barrier for families to improve their homes was the **challenge of accessing resources** in the form of finance either directly through earnings or through a loan. Any available money was invariably spent on school fees or food, which proved to be dominant alternative priorities. The main priorities for families were: **surviving on a day-to-day basis**; and sending their children to school, to improve the children's future social mobility. Families selected to receive T-Shelters especially are already at such an extreme level of vulnerability that access to credit for housing would not even have been a possibility before the earthquake. The triggers therefore which propelled people to make changes often came with an opportunity to access additional money, credit, or cheap labor.

Another key factor in the decision-making was linked to the suitability of the shelter /house to meet the family's needs. If the family was relatively small (3-4 people), and the shelter was in a good condition there was less impetus to make material changes. If the T-Shelter had started to degrade, presented security issues through the continued use of tarpaulins, or did not sufficiently house the number of family members, then there was more chance that the family would prioritize upgrading. Additionally, if owners had alternative places to sleep, or an old house that needed repairing, then it was common to find that families either met their shelter needs by using the different structures on the family plot, or had

started to invest in repairing their previous, ancestral home.

In terms of traditional houses, there was a range of different examples of improvements and construction methods used. These included some examples of families repairing their houses using the methods promoted in the Medair trainings. If families had access to sufficient finances, the owners contracted trained masons and carpenters to provide a stone, cement and integrated timber construction. These examples however were rare. More commonly, once clients were presented with a relatively sophisticated Bill of Quantities (BoQ), which featured additional materials such as timber and nails the clients then refused to put forward the additional funds. Despite having the knowledge required, the masons and carpenters are forced to return to simple stone and cement infill without the bracing.

The skill and knowledge of improved techniques exists among the smaller contractors, but the required demand and willingness to change practice at household level is not yet sufficiently mainstreamed. There is a hesitancy to invest what is perceived as a large amount of money in their home as past construction practice only involved low cost maintenance and upgrades. The cost of more permanent large-scale upgrades is beyond their budget. This cost constraint, coupled with the threat that their homes are likely to be damaged by seasonal cyclones incurring more losses means a risk that they could be pushed into a more vulnerable position in the future.

The findings also show clear differences between the types of shelter adaptation in remote rural areas, better-connected rural areas and peri-urban settlements. In rural areas people traditionally upgraded their houses incrementally using the natural resources available from the

surrounding environment: timber, stone and limestone. The improved processes however are harder to achieve, as access to suitable wood becomes more of a challenge and more expensive. In peri-urban areas construction practices are increasingly impacted by the availability of concrete blocks and masons trained in recently introduced confined masonry construction. Unlike timber, blocks are a relatively fixed price.

Constructing in blocks can be rapid and the cost is often (or is perceived) to be lower than a mix of stones, cement and timber. Block housing has the additional advantage of being demonstrably robust in the path of a hurricane, this has been observed in the settlements of the Southeast following Hurricane Sandy in 2012. The longevity of the construction also means that the investment goes farther than a method that could need repairing in 4-5 years. Confined masonry does have the potential to be a safe building technique if constructed by a trained mason who follows safe construction practices and uses good quality materials. If built incorrectly the damage could prove worse than a structure built using more traditional methods.

### 4.3 Detailed Analysis

The ranges of factors influencing decisions concerning construction are explored in the topics below; for each topic there were factors that were triggers and those that were barriers. For financial issues for example, lack of funds was a barrier whereas access to additional funds was a trigger. Under each topic a general **'Recommendation'** is made to address the challenges discussed.

#### 4.3.1 Resources

- Financial considerations, costs of construction methods

#### 4.3.2 Economic and Lifestyle Priorities

- Other financial priorities

- Alternative options for shelter
- Family Size
- Perceptions of Risk

#### 4.3.3 Capacity

- Timelines and time cost
- Security of Tenure
- Safety and Security

#### 4.3.4 Knowledge

- Trainings and community awareness
- Construction approach and trainings
- Beneficiary Selection, targeting and communication
- Influence of other NGO activities

#### 4.3.1 Resources

One key determinant in the adoption of better construction practice is cost and availability of materials and the labor to carry out the work. The methods used in self-construction vary in cost; the choice of technique used reflects a family's access to finance and materials, and whether they have the expertise to implement the works themselves.

The access to materials is linked directly to the type of construction or upgrading methods that are possible in a given location. Traditionally people draw directly on the natural resources around them for construction activities. However, as these resources become scarce and therefore expensive, traditional methods are in decline. Traditional methods in La Montagne including *la choux* (a calcium and wood ash mix) and *la tiff* (a lime based white WASH used in *clissage* in Côte-de-Fer) were both sourced locally at low cost and used to render the stone or *clissage* constructions. Each process however requires the use of local trees, such as the palm tree for *clissage* and substantial amounts of wood is needed to reach the temperatures needed to produce lime.

Masonry and mortar construction is common with and without the additional

wooden bracing within the wall. But the prices of wood (local and imported) deter families from using more than what they see as the minimum. Concrete blocks are available in Jacmel/Côte-de-Fer and often present a faster means of construction that is also often perceived to be cheaper by some families than rock/stone and mortar construction, despite the additional transport costs. Families have upgraded, repaired or reconstructed using the materials that are most accessible to them and employing the methods that they best understand, that they can afford.

#### Different construction methods costs

**Clissage:** In the more rural areas materials can be found or sourced locally at a low cost to the household (even for free). Clissage - a kind of wattle and daub - can be achieved with a low investment in materials, using small pieces of wood gathered locally. However, if resistant wood such as palm is not used, it will not last very long before requiring more maintenance work. Additionally, the earth render can need repairing every 7 -30 days depending on the season and amount of rain.

**Larger scale clissage:** If implemented on a larger scale it requires financial resources. The limestone earth used for the render needs to be purchased and transported if not found nearby. Palm wood, the ideal material, has also become hard to source, and can encourage de-forestation. The labor needed depends on the skills level of the house owner. A house of 36 m<sup>2</sup> (prototype core structure) with partitions can take 1 month and costs 8000 gourdes - \$200. (Photo 5)



Photo 5: Family that benefited from permanent house construction in Côtes-de-Fer.  
Credit: Rule

**La choux, la tiff and concrete cement:** La choux is made through a process of heating limestone. It can either be used in render or as lime mortar. As the process uses a lot of wood, and cement is increasingly available in all areas, there is a move towards using cement renders. However, the cement for the mortar is significantly more expensive than using earth-based products at \$8 per 50kg bag. La tiff is a mix of chalky earth giving a whitewashed appearance to the houses, but the earth is not available in all locations.

#### **Rock/stone and mortar:**

Stone construction with vertical wooden posts may need a hired mason, unless a member of the family is skilled. The stones used may be sourced on the client's land or be imported from nearby, or a riverbed. The panels are not often reinforced and may or may not be rendered, leaving the possibility of a whole panel falling in an earthquake.

**Rock/stone plus wooden reinforcement:** If cross bracing is used within the wall as promoted by Medair the risk of a panel toppling reduces. However, this method will require a mason who has been trained or can learn from the models in the local area. It requires more initial funds than unreinforced masonry, and additional nails to the traditional style of construction.

**Concrete-block confined masonry construction:** (if locally available this method is presently perceived to be cheaper and stronger) Masons can complete the work quickly albeit at a low structural quality. For cyclones the blocks are thought to be more resistant, for earthquakes people in the area appear to be confident that more and more masons are trained in para-seismic construction. The prices of the blocks are 30 gourdes per block, plus one bag of cement for each 60 blocks at 8 USD per bag of cement.

The access to different types of materials varies and differs between the more urban areas with access to material depots, those rural areas with easy access to the town (Jacmel/ Côtes-de-Fer for example) and rural areas that are at great distances from the nearest center. Some materials, such as the wood used in the Medair model house as bracing, are not always available locally. Availability can deter families if they feel that achieving changes is too complicated or expensive. This is a very important factor to consider in programme design. Is it possible to have a 'one-size fits all' approach to peri-urban, rural and urban contexts?

#### **Recommendation**

Advocating reconstruction methods that suit a wide range of choices, and promoting simple key steps that can be taken to improve housing could be more easily adopted than one specific method of reconstruction that requires certain materials.

#### **4.3.2 Economic & Lifestyle Priorities**

- Economic priorities
- Alternative options for shelter
- Family Size
- Perceptions of Risk

## Economic Priorities

Due to the low level of economic activity, people in the Southeast rarely have the financial resources to engage in extensive construction. The livelihoods of the populations in places like La Montagne and Côtes-de-Fer depend on agriculture, livestock and small businesses. Families are not in the practice of saving cash for a 'rainy day' but often invest any money in livestock, which acts as the equivalent of a bank account: livestock can be sold when additional funds are needed.

The majority of beneficiaries who have been able to upgrade have done so because they had access to credit, they could borrow money officially or unofficially within the local area or received money from abroad through remittances from relatives living in the diaspora. Loans from friends provides a flexible repayment system, which suits the ups and downs of their income flow and allows long repayment periods of up to 3 years.

Among the examples of families that have upgraded or reconstructed, the common theme was access to funding or a re-prioritization of expenses. Some families sold livestock, or ceased to send their children to school, to fund the construction work. Conversations with those families that had upgraded often involved talking about sacrifices rather than opportunities. Additionally, in Côtes-de-Fer earning additional money on top of agriculture activities helped in raising funds. Small businesses selling wood are common and the process also involves replanting oak trees that continue to grow once cut (coppicing and/or pollarding). Three small oak trees bring in 1000 gourdes (\$22) in revenue each year and can be used to pay for schoolbooks etc., and maintain the *clissage* on the houses.

Those families that had additional livelihood support, injections of cash from abroad, flexibility in access to loans

funding, or were able to reallocate existing funds were able to invest in reconstruction. Once they have that opportunity, they then chose the method of construction that was most accessible, affordable and quick to implement. Those families that were still at a level of vulnerability, which does not enable additional expenditure, will not consider housing improvements over food and schooling as long as their shelter is adequate. A partial cash subsidy for upgrading can be attractive to a poor family. However, because of the need to find the remaining money, there is a danger that it can also encourage a family to become indebted, to sell livestock or withdraw their children from school.

Additionally, other concerns that directly impact day-to-day lives take priority. The current drought (2014) has impacted heavily on the harvest in the Southeast of Haiti. The main concern for people, especially in La Montagne and Côtes-de-Fer is access to produce to eat and sell. In this economically difficult time, basic needs and livelihoods are taking priority over longer-term activities such as upgraded housing. Secondly, sending children to school, paying school fees, buying uniforms and equipment is of great priority, as school is seen as an investment for the future and social mobility for the next generation. As long as shelters are relatively watertight and accommodate the size of the family then upgrading is likely to be lower priority. Other large expenditures can also impede a family's ability to save money for construction. Events such as funerals, which are very important ceremonies in Haitian culture, require large sums of money.

**Recommendation:** Shelter support needs to respond to a family's economic reality and to their specific perceived needs. The choice of response typology should be led by the family themselves and attention must be paid to the wider cross-sectoral



challenges such as livelihoods that need to be considered in parallel to shelter support.

#### Alternative options of Shelter

In rural areas where the plots are larger and form a 'lakou' it is common to have at least 2 to 3 buildings on one site: the house, a building for cooking, and one for storage. There are a number of people that still have their damaged house on their plot, using it during the day for cooking and storage, while the T-Shelter is used for sleeping. There is a possibility that having two semi-functional buildings on one plot does not act as a catalyst for upgrading either building.



Photo 6: Previous house present on site.  
Credit: Author

There is an opportunity for multiple uses for the T-Shelters if families choose not to continue living in them. They can become a storage space or provide an additional room; therefore extensions of the actual shelter are not always necessary for a family to have more space. It is important not to discredit the importance of the damaged house; the cultural importance of the ancestral home and any choices to either rebuild or repair need to be respected and if possible supported.

**Recommendation:** T-Shelters are often considered as a bridge between relief and recovery, allowing families to transition to another solution. It is important to recognize that upgrading T-Shelters is not the only end outcome to be planned for or supported. T-Shelters can provide time

for families to transition to the point where they can see how to recover and start making decisions towards longer-term solutions, which may be repairing of previous houses, or building a new house.

#### Family Sizes

Family size and dynamics directly affect housing needs, and can be the drive to develop or upgrade accommodation. In Terre Rouge, due to a large family of ten, one beneficiary repaired her existing traditional and larger house after using the T-Shelter for a short period of time while she raised the funds to pay for the repairs. They now use the T-Shelter as a spare room for visitors, or children who only return home from school at the weekends.



Photo 7: Repaired traditional house in Terre Rouge  
Credit: Author

For the larger families the T-Shelter is not sufficient to house everyone; in these cases the shelter size can act as a trigger for the family to repair their previously damaged house. In Haiti it is also common to have extended or separated families. Husbands and wives can live in different houses. In Vila in the Côtes-de-Fer region, a core structure that still required upgrading was in use by a father and his son (Photo 6), however his wife's permanent house was in a different location.

**Recommendation:** The option of alternative shelter within families can also reduce the urgency to upgrade the shelters provided. Having detailed

knowledge of a person's status can mean that more tailored approaches can be achieved. The examples of Handicap International's work in bespoke T-Shelters shows that it is possible to provide a similar approach to a large number of beneficiaries but to offer a bespoke response within that, linked to their needs.



Photo 8: Non-upgraded core structures in Côtes-de-Fer Vila. Credit: Author

#### Perceptions of risk – Earthquakes versus hurricanes and other threats

In the 1800's Haiti suffered from several significant earthquakes. In La Montagne and Côtes-de-Fer however, despite Haiti's history of strong earthquakes the concern for protection from hurricanes appeared to be greater than the fear of earthquakes. The population experiences cyclones on a nearly annual basis, yet an earthquake has only affected the present population once in their lifetime. Cyclones can cause significantly more damage to houses of thatch or palm leaves and *clissage* than an earthquake. In Bas Cap Rouge, the storms not only cause the water levels to rise but the rocks from the slopes behind to fall onto the irrigated agricultural lands, ruining fields and houses alike.

For cyclones, concrete block housing is perceived to be stronger by residents in the Jacmel commune, as there is visible evidence of houses that went undamaged following Cyclone Sandy. Time also plays a key factor in the perception of risk. Cyclones as they recur annually are more

present in the minds of the local population. The impression gained through conversations with communities is that because of the (perceived) unpredictability of earthquakes, it is not worth being overly concerned with preparations for something that may not happen again within their lifetimes.

#### Recommendation:

Build up a comprehensive understanding of the perceptions of risk within the local area, down to the specific settlement, to inform DRR messaging. In Fort Ogé, the PASSA meetings showed that the settlement was exposed to strong winds and therefore a buffer to reduce the impact of these winds was seen as more important than individual shelter improvements.

#### 4.3.3 Capacity

- Timelines
- Security of Tenure
- Safety and Security

#### Timelines and time costs in maintenance and upgrading

Another factor influencing a family's decision is the season or time of year and their planned activities. Traditionally, housing improvements are made in December and January. This coincides with the more prosperous time of year, when money is sent from Haitian diaspora living and working abroad. At this time of year it is important to present a well-organized, cared-for house as friends and relatives will visit at Christmas or in the New Year. It is also important to start the New Year with the house in a good condition, and it is a common season for weddings. Access to labor also varies throughout the year and can link to the school year, as children are more available to assist with the work during the holidays.

In terms of the amount of time dedicated to maintenance, this depends on the method used. The time between maintenance and further repair work varies from every week (*la tiff*), once a year (*clissage*), every 4-5 years (stone and cement) and every 20 years, (block). The tradition of working on repairs or house construction within certain timeframes could impact on the population's perceptions of cost and ease of maintenance of the proposed Medair methods. The amount of maintenance needed or the longevity of the chosen technique does influence people's choice of construction method. People often only re-do houses made from rock and mortar every 4-5 years. To better understand construction practices in the Southeast, further observation in this 4-5 year timeframe is needed since the earthquake could have generated a surge in upgrades and a change in common construction practice.

**Recommendation:** Understanding the traditional ways of implementing construction pre-disaster and how that has now been changed in a post-disaster context will allow for a clear understanding of how beneficiaries perceive new methods. The costing of housing that is incremental or involves maintenance is complicated and families may need support or training to appreciate how different construction options and the cost of maintenance can inform their choices.

#### Security of Tenure

The majority of interviewed families in the Bas Cap Rouge and La Montagne live on ancestral land that has been handed down to sons and daughters. Some larger plots, which may have once been agricultural land, have been subdivided with each new generation, providing land for additional families. In scenarios where there are several familial houses in the area, there are often alternative options for affected families to move in with

relatives close by or to occupy previously unoccupied structures on the family plot. This can become a factor against taking the choice to upgrade a T-Shelter or rebuild their damaged home.

On the coastal side of the road in 'La Port' on the western outreaches of Jacmel, the families rent the land between the road and the sea from the state. They pay an annual fee to the DGI 'Direction Generale des Impôts' - the Tax Administration of Haïti. Their tenant status however has not deterred them from investing in their shelters. Their perceived security of tenure is sufficient to invest in an upgrade using permanent materials.

#### Security and safety in the Shelters

Security concerns, such as fears of robbery and non-serious damage to the tarpaulins by children with razors were common factors obliging people to start upgrading T-Shelters. In Bellevue, a story of a shooting that occurred in the area acted as a trigger for some families to upgrade from the tarpaulins. The story of a woman apparently shot through the tarpaulins became an 'urban myth' and propelled multiple families to solidify their shelters.

As has been discussed, the lack of a solid infill to the walls of the T-Shelter can in itself act as a trigger for upgrading, however a balance does need to be found between making sure families are safe and encouraging them to invest in the T-Shelters. The Canadian Red Cross shelters have had a lower level of upgrading than the Medair T-shelters as the plywood walls are already solid and as yet do not need replacing. Enclosing the shelters with tarpaulin means that families are likely to want to up-grade for security, privacy, and durability reasons, but they may not be able to do so if they do not have the resources or capacity.

**Recommendation:** Additional support to livelihoods can assist people to transition

out of or to upgrade the T-Shelter. Consider different options of support: what is the beneficiaries' chosen path to recovery? The money required for the upgrades (\$1,200,) could be used to support these individual choices.

#### 4.3.4 Knowledge

- Construction approach
- Materials
- Trainings
- Beneficiary Selection, targeting and communication
- Influence of other NGO activities

##### Construction approaches and trainings

The construction methods used by Medair are based on the existing construction practices, and improve the strength and longevity of the core structure and masonry work. In interviews with the masons, the feedback on the training was positive; they believe that the trainings advance their skills and make for stronger, safer structures. Small amounts of work have been available to them over the hurricane season, involving adding bracing to timber structures and small repair work to panels of masonry walls. However, in terms of new construction the masons have found it difficult to convince clients to adopt the safer approaches.

Traditionally, masons present the bill of quantities (BOQ) to the beneficiaries to purchase the materials required for the work. This list of materials in the BOQ can be intimidating for the owners, and the price can be higher than they usually pay

Masons and carpenters are also not in the habit of buying the materials themselves, therefore there is a lost opportunity for a quality check of materials at the point of purchase/procurement. Trainings increase the supply of small contractors with the

skills to strengthen houses, upgrade T-Shelters and construct a house to the improved standards. However, without the demand from clients to use improved methods the emphasis presently can only come from the masons to convince families to invest more in their homes.

Additionally, the high quality and finish of the model houses can also deter people from understanding individual lessons, as it may be difficult to isolate them into bite-size pieces of information. People feel that they cannot achieve the standard of the model – they can't do everything, so they don't attempt anything.

The aim of the trainings and PASSA is to encourage people to adopt better construction practices, to encourage owners to initiate upgrades of their houses, and to analyze what is safe and not safe and then plan for future upgrades. In the areas where the training overlapped with the T-Shelters, these trainings may also have had an impact on people's decisions to upgrade the T-Shelters. However, the PASSA training involved visits to observe the full reconstruction of new housing in the form of the Medair model house, not smaller incremental changes that are suitable for homeowners with low technical knowledge. It is important to support the PASSA process with practical homeowner trainings that promote simple upgrades to make houses safer and increase resilience.

**Recommendation:** Homeowner trainings on material quality and choice as well as construction typology can further increase awareness of best practice. Trainings that focus on small details of the model houses and concentrate on only few key safer building messages, which are easier to achieve, have more potential to communicate simple key DRR principles to the wider community, which can have a greater impact.





Photo 9: Medair Model House for demonstration and training. Credit: Author

### Construction methods employed

The materials used, the design and the suitability of the T-Shelter, and the model house design may have also acted as triggers or barriers to beneficiaries transitioning towards more permanent solutions.

#### T-Shelters

**Flexibility:** One reason for beneficiaries upgrading, not upgrading, or transitioning to new construction is linked directly to the T-Shelter itself. The T-Shelter design influences the family's recovery options. It can provide a strong, durable structure, and enable those that have lost their home entirely to quickly reach safe shelter solutions. In the short term, the T-Shelter should provide a transitional step towards a more permanent solution, by giving the time needed for beneficiaries to recover from the impact of the disaster and make a plan for how they are going to rebuild their homes. However, in Haiti, due to the importance of the ancestral home, the options for reconstruction or repair of these traditional houses should not be ruled out.

The T-Shelter may not be suitable for longer-term accommodation, and if a family uses it as a secondary home while reconstructing a more permanent structure then that is a valid use. Inadequate T-Shelters can return the

families to the state that they were in pre-earthquake. They may have a stronger core structure but the lack of a solid wall, and the family's stricken economic circumstances, may mean that it cannot be upgraded and they are obliged to live in sub-standard conditions. For less vulnerable families the T-Shelter can act as a jump-start to recovery. These families have means of investing in its development or in reconstruction.

T-Shelters may not be suited to the type of house that a family needs in the future. The design is adaptable to timber extensions yet during the field research there were not many examples of extensions being built. This could be due to multiple reasons but one possibility is that the T-Shelters are not perceived to be a structure that can one day become the main home for a family. This may be linked to the size, the nature in which the family received it, or the fact that the families want to repair their previous home and therefore do not hold upgrading to be a priority. In some cases the concrete floor of the T-Shelters has started to de-grade, and the interior partition wall posts have not always been treated sufficiently at the base and have been attacked by termites at the point where the post meets the concrete plinth. These inadequacies also appear to also deter some families from investing in the shelter in a more permanent manner.

**Recommendation:** T-Shelters can provide the time needed to plan longer-term recovery, but also they can delay recovery if there aren't subsequent resources to assist families in reaching permanent housing to a pre-earthquake standard. Support should be carefully matched to a beneficiary's capacities and longer-term aspirations.

#### Materials

**Timber:** The wood required for the bracing and support within the model houses and T-Shelter upgrades - the

1"x4"x16" within the wall sections - cannot always be found locally, requiring a timber merchant with imported products. The prices of imported wood are beyond the budget of most families. Locally sourced wood, Haitian Oak or Acajou for example, require significant shaping to become a uniform piece of lumber – again making it an expensive option. A clear cost comparison of the two different types of wood is complex, as the cost of locally-sourced wood changes significantly depending on location and supply and demand dynamics in any given month.

**Recommendation:** Wood generally, whether imported or locally sourced, is viewed by the majority of the interviewees as the most expensive part of engaging in construction. Further communication and understanding is needed on the impacts of the use of wood in construction on the finances of the homeowner and on the environment. Support to families to understand how to budget for construction work would also build the confidence of families to make changes to their houses, without risking a loss in their investment.

**Tarpaulins:** In some cases the tarpaulins have acted as a trigger and in other cases a barrier to upgrading. The core structure allows families to choose their own types of construction and infill. However, for those families which have no means of upgrading, the provision of tarpaulins can result in them being in a more vulnerable position than before.

The tarpaulin is not secure in the face of robbery or violence. In strong storms such as Sandy in 2012 the tarpaulins did not always withstand the winds, and needed to be replaced afterwards. Yet if the tarpaulins still provide shelter, are not damaged and are waterproof then families who have other pressing priorities will not consider upgrading an urgent activity. Nevertheless, if families

have the means to improve their shelters then the perceived inadequacy of the tarpaulins can be an encouraging factor, and they are replaced.

In peri-urban Bas Cap Rouge many families aspire to using blocks. Due to the proximity of Jacmel town blocks are an acceptable material for housing, are easily obtained and seen to be a quick method of construction. They also present, for some families, a way to increase their social standing. (Photo 10)



Photo 10: T-Shelter transformed using concrete blocks in Bas Cap Rouge.  
Credit: Rule

**Recommendation:** By having a detailed understanding of the availability of materials in the local area and the preferred construction methods, it is therefore easier to match the type of shelter support to accommodate these variables.

### **Beneficiary Selection, Targeting and Communication**

During the research visits to Medair T-Shelter beneficiaries, it became apparent that there are examples of people who manage to upgrade T-Shelters or carry out repair work on their houses with minimal resources; at the other end of the scale there are those with resources who bide their time, waiting for Medair or another organization to make the T-Shelter upgrades. The initial status of the family chosen to receive support, the criteria through which they are selected and the communication methodology employed is very important in reaching the most in



need but also encouraging all families to take the lead in their recovery.

#### Targeting

The initial Medair targeting focused on the most vulnerable families that were affected by the earthquake. In 'normal' circumstances, pre-disaster, the selected families would not have had the adequate resources to invest in new construction. The support given in the form of T-Shelters or Core structures means that they now have stronger base structures than they did pre-disaster but they have also returned to their pre-disaster economic status. They are still unable to access disposable funds for housing, even if approached in an incremental manner.

**Recommendation:** Examples of initiative and progress in shelter improvements could be encouraged, harnessed and rewarded. Alongside the approach to offering support to the most vulnerable, a package of support could be offered to those that have capacity, knowledge and willingness and have started to proactively make changes to their homes but can't continue.

#### DRR Messaging, and Sensitization

The DRR messaging in Jacmel commune has been delivered through technical trainings since 2010 and recently in 2014 has involved the use of PASSA at community level. The technical trainings have created the knowledge and skills needed amongst contractors to start improving the type of construction implemented at household level. However, the demand from the clients to use these methods has not met the supply. The reasons for this are multi-faceted. One issue is that the way that materials are procured is habitually done by directly giving the clients the BOQ. The masons and carpenters have little authority to dictate the quantities or qualities of the construction materials,

and it is the client's prerogative to cut materials deemed unnecessary.

The PASSA process starts to raise the awareness of families (home owners) to the importance of more resilient and stronger houses. However, the PASSA process is designed to encourage communities to look at small incremental steps and remedial improvements to their homes that will strengthen existing structures, measures that are low cost and do not require large investment. This approach is in contrast to the high-finish of the model houses used in Medair trainings that are implemented in parallel to the participatory approach. These technical trainings are running in the same locations to the PASSA meetings use a model house to demonstrate examples. The model house costs \$3000, this level of investment is impossible for members of the community to reach. There is therefore a mismatch between the messages being disseminated through the model house training and what is achievable with the community's capacity and resources.



Photo 11: PASSA Meeting in Fort Ogé.  
Credit: Author

**Recommendation:** To avoid a mismatch between messaging and the communities' capacities and aspirations, the examples of best practice should be in line with the smaller incremental measures that the people can carry out and pay for themselves.

### Communication: Timing and clarity

The use of messaging and beneficiary communication around shelter provision can play a strong role in encouraging people to take ownership of their shelters and initiate upgrades. A handover package and explanation of the maintenance and key structural elements, such as cross bracing, is important to share with the new owners and can increase the level of commitment people have to maintaining their shelters.

Additionally the expectations of beneficiaries can be carefully managed with successful and clear communication at the time of distribution. Some T-Shelter beneficiaries appeared to be unclear about what was expected of them once the T-Shelter had been completed.

Despite community DRR meetings having taken place to inform beneficiaries of on-going maintenance responsibilities, there did not appear to be sufficient messaging around safe methods for future upgrading activities and the related responsibilities of the families. Photo 12 shows a house with cross-bracing removed during the upgrading of a T-Shelter.



Photo 12: Core shelter upgrade in Côtes-de-Fer disregards cross-bracing.  
Credit: Author

In some areas of peri-urban Jacmel there was a high level of awareness of the different Shelter projects that had been initiated post-earthquake. In this area, there are 3 perceived stages to Medair's work, the A-Frame Shelters, the T-Shelters

and the Permanent Housing. The phasing of Medair's activities in the zone itself influenced the expectations and actions of the local population. The community saw the distribution of the A-frame tents, the return of Medair to provide T-Shelters and then the subsequent return of Medair to upgrade selected shelters into permanent structures. Many people in zones where Medair continues to work (in WASH) are waiting for Medair to complete the houses to the 'final stage'.

The on-going presence of Medair, the visibility even of visitors in Medair cars can add to the expectations that the agency will return with a final phase to complete the shelters. The upgrades completed by Medair provided a solid home for those that were most in need in the community. The selection process, however, impacted on the motivation of some families to undertake shelter improvements themselves. It was understood that if families showed they had the capacity to make changes to their shelters then it could count against them in a selection for a Medair upgrade.

### Role of the local government in communication

In some areas such as Bellevue, clear messaging concerning beneficiary selection via the Casecs has worked as a trigger for people to start construction. The Casec encouraged beneficiaries to start upgrades explaining that they do not qualify for the support for the more vulnerable; therefore they should not hesitate to work on the houses themselves. In Côtes-de-Fer, walls and partitions were added to the core structures with roofs when community mobilisers and Shelter PM staff clearly stated that the core structure would be the only form of support that they could expect.

The framing of a problem can often dictate the solution. If the problem 'unsafe construction practices' is framed

as the problem of the individual, then this limits solutions to one scale – that of the household. The training of building contractors and the wider community brings the challenges to a wider level of responsibility. Identifying barriers and triggers at community and institutional level better embeds the individual's experiences in the wider context. Wider barriers that came to light were linked to the environment, the rules around logging and deforestation, the quality of cement blocks available in the area, and the lack of government voice on the topic of construction practices in the Southeast.

### **Influence of other NGO activities in surrounding areas**

External actors will often have an impact on projects and the behavior of beneficiaries when operating in similar regions. PU is especially active in the La Montagne and La Port areas west of Jacmel. Their approach to permanent reconstruction is similar to that of Medair's, but relies on a re-appropriation of traditional methods such as *la choux* and uses less cement. To counteract the amount of wood used in the *la choux* process and house structure, beneficiaries need to have land available where they can plant trees. One household might be required to plant up to 90 saplings. PU has a training workshop / studio active in the La Port area for training carpenters and masons.

Another NGO in the La Port area planned to upgrade T-Shelters with a ferrous cement board; when the plans did not come to fruition the boards were available on the open market. Some beneficiaries chose to buy the board over completing their house in rock and mortar construction, as it was cheaper and quicker to finalize. PU have transitioned from doing block construction initially in the La Montagne area, to more traditional methods (shown in their upgrading of the Medair T-Shelters) and now are in the

process of developing a fully locally-sourced house.

**Recommendations:** Mapping the activities of other agencies and taking in to consideration how communities may respond to these external factors can inform on-going programme decisions, and offer opportunities for partnership or cross-agency learning.

### **Other agencies' activities**



Photo 13: PU concrete house (2010) Copyright – Planète Urgence.



Photo 14: PU Traditional Timber House (2014). Credit: Author.

#### 4.4 Question one – Conclusion

The research revealed that there is a range of different factors that come together to instigate a change in shelter or housing conditions of families living in areas at risk in the Southeast of Haiti. Specific questions that emerged from the research explored why the rate of upgrading of the Medair T-Shelters had been relatively low, and why the promoted stone and timber permanent construction methods had not yet been widely implemented. The 2014-2015 Medair programme is four-pronged, comprising mason and carpenter training, community awareness activities for safer shelter practices through the participatory approach PASSA, homeowner training and this research into triggers and barriers (Programmes: Annex 8.9).

The model house and the upgrades that have been carried out by Medair start to promote a longer-lasting approach to construction. They offer an example of what can be achieved. What was clear through the research is that the injection of training and sensitization is in itself not a trigger to the adoption of safer construction. The knowledge can be there but the ability to use it may not be. The challenge of communicating simple, easy to implement, safer construction principles is the first step; but providing the conditions for families to act on this knowledge is another matter altogether.

The families interviewed in the Southeast were aware of the risks of earthquakes, and even more so of the annual threat of cyclones. Masons and carpenters who had received trainings saw the value in the approaches and understood that there were more durable and safe solutions to construction based on the present construction practices. However, many potential clients (those commissioning construction repairs or rebuilds) did not (yet) have sufficient motivation or concern to consider spending additional

funds on safer construction measures if they cost more than the existing methods. The limitation of resources was a key barrier to the implementation of adopting more sophisticated construction techniques; people having other pressing priorities also compounded this. Additionally the use of informal methods for access to credit do not best-suit large investments that are now needed for housing as construction methods use more expensive materials than palm and lime renders.

Awareness-raising and capacity building activities put in place the skills and understanding of safer construction that can then inform future construction and shelter choices. If and when people have the opportunity to change or adapt their shelter or housing conditions, they can make more informed decisions about how they proceed. However, implicitly influencing people, or triggering a direct change, relies on creating the right environment to facilitate that change. The right resources, financial support, knowledge and capacity are essential. The research found that the following four headings capture the factors that accrue to initiate a decision.

- **Knowledge leading to motivation**
- **Capacity**
- **Access to resources**
- **The absence of other priorities**

Decisions to upgrade require a combination of these factors; however they may take time to fall into place. From an injection of cash from diaspora to a growing family, household level factors, the season and the economy of the market conditions all play a part in prompting change. As a result, the ability to directly affect the range of these external triggers and barriers is often out of the area of influence for singular humanitarian interventions. A broad, integrated programmatic approach that can adapt to different scenarios can begin



to explore the longer-term influences humanitarian interventions could have in areas in need of risk reduction.

## 5.0 Programme Approaches

**Question 2) What are the programmatic approaches that could mitigate or capitalize on the factors, which act as barriers or as triggers respectively to increase the utilization of safer building principles?**

Reflecting on the exploration of Medair's activities in Haiti, and identifying specific triggers and barriers within this context, this next section considers the recommended approaches and actions that can inform those humanitarian programmes which are concerned with improving construction practices through DRR and Shelter interventions.

As discussed in Section 4, the ability to directly affect external triggers and barriers is at times out of the area of influence of humanitarian actors. Events that may trigger change, such as additional family members, fears for security and support from diaspora, are examples of these external factors. If agencies cannot instigate the decision to upgrade, or decide they should not be the catalyst for change, then the challenge is therefore, how to increase the likelihood of people choosing to use safer building principles once the triggers have occurred or the barriers have been removed. This requires an approach to DRR and Shelter that is context-specific and responsive to the choices of the different communities and families involved in upgrading or reconstruction.

### 5.1 Approaches to increase the use of safer building principles

This section presents the potential programmatic approaches to increasing the use of safer building principles into six

themes as shown below, and makes related '**Recommendations**'.

- 1. Motivations and the role of humanitarian actors**  
Motivations between agencies and beneficiaries are not always the same and can vary at different times in a response and at different scales within a community.
- 2. Beneficiary-led priorities**  
Responses need to be primarily driven by the populations' capacity, needs and aspirations.
- 3. Adapting approaches to context**  
A detailed reading and understanding of the context is key to adapting responses to feature appropriate construction techniques, material choices, and training topics in relation to the specific geographic localities.
- 4. Flexibility of shelter interventions**  
Shelter and DRR support need to respond to individual needs and scenarios, providing a pallet of options to match specific scenarios.
- 5. Informed and targeted DRR messaging and programme communications**  
Messaging works well when it is directly linked to the different choices beneficiaries are faced with.
- 6. Understanding trends and inevitability of progress**  
Continuous monitoring of on-going construction trends and preferences will assist in maintaining appropriate and supportive recovery activities.

### 5.1.1 Agency Motivations

To understand how programmes can be responsive to safer and more resilient self-build activities, it is important for us to understand the drive and aims behind the promotion of safer building practices. In planning DRR and Shelter programming, three areas of questioning can help direct the types of approaches used from the outset:

- What are the aims and motivations of the agency?
- How does this relate to the priorities of people involved in self-build/ self-construction?
- How do the types of responses and activities that are chosen in DRR and Shelter programmes link to the beneficiary families' decision-making, capabilities and resources?

When considering the motivations or the challenges (triggers and barriers) to investing time and money into upgrading or reconstruction, it is important to reflect on the reasons why both families, and agencies, would want to upgrade. As presented in Section 4, **concerns over access to finance, livelihoods, space and security** are the key factors for people to make changes to their homes. If driven to do so, most families either temporarily sacrifice another priority in their lives to allow them to carry out new construction, or capitalize on opportunities of support presented to them from NGOs or other members of their family.

DRR and Shelter interventions led by **humanitarian agencies** often present a range of expected outcomes, direct and indirect, which are aimed at supporting individual families as well as improving the situation at a wider community or

institutional level. Outcomes could be (A) to **support an overall improvement in the construction practices** involved in new builds in the region, (B) to **raise awareness at community level of DRR measures** that can be taken to protect their houses from future risks, or (C) to encourage existing beneficiaries to **add incrementally to their shelter solution** to increase their security/safety.

Programmes can involve a combination of these desired outcomes and attempt to work at multiple levels to encourage a change in practice. This range of impacts implicates different groups of the population with different roles in the construction of housing. Maintaining a balance between the needs of the community and the individual is important.

**Recommendation:** If a programme develops incrementally from year to year, it is important to re-assess the context and changing needs to re-align programme activities to respond to the contemporary needs.

### 5.1.2 Beneficiary priorities

What is often intended as an incremental approach to longer-term reconstruction also risks being seen as a new phase of a project aimed at improving the results of previous interventions. If funding allows an on-going recovery programme, and it is strategically planned and well communicated, then a follow-up of support in sequential phases can, in some cases, support people in their recovery decisions and mirror the incremental approach to shelter that is traditional in the Southeast.

However, the **types of support** and the **types of messaging** should be **tailor-made** to be **directly applicable** to varying beneficiary **needs and aspirations**. A **clear distinction** is needed between **DRR messaging, upgrades** of agency shelters



and **encouraging the wider use of best construction practice** at commune level.

For humanitarian actors, accountability to beneficiaries and donors through providing durability and longevity of the shelter solution are key driving factors in programme design. However, **these goals should not take precedence over the needs of the beneficiary**. Humanitarian actors should be wary of trying to analyze triggers to self-reconstruction with a view to capitalize on these triggers and influence people's choices. Should humanitarian agencies push people to upgrade if they cannot afford it? Can humanitarians push for upgrades without supporting and understanding the livelihood constraints of the beneficiary, or the sourcing of materials with which to facilitate the changes?

**Recommendation:** Humanitarian actors need to carefully develop DRR messaging so that the families can understand the most important safety messages and measures, and make an informed decision on whether they can upgrade, reconstruct or just make remedial improvements to their homes. Full upgrading could result in sacrifices such as keeping children out of school, selling livestock, or taking out additional loans which are challenging to repay and could result in families being less resilient than they were before.

#### Different methods of Support

Each family may require a combination of varied support methods. Medair explored the options of repair and reconstruction in 2010, using chicken wire to reinforce the masonry walls, however the relative simplicity of the traditional housing structures meant that once one aspect was altered, the remaining structure also needed redoing. The cost of repairs was higher than the cost of a new T-Shelter. The T-Shelters, however, are less adaptable to the different recovery needs of the population. A programme that allows for some repairs or reconstruction of existing houses, or livelihood support

and trainings and technical support to facilitate repairs allows different needs and aspirations to be addressed.

**Recommendation:** Providing a wider pallet of options for those affected communities to choose from allows them to match a combination of types of support to their specific situation.

### 5.1.3 A detailed reading of the context

#### Settlement and Regional Level

The locations of Medair's interventions span **rural settlements, remote highland villages** and **peri-urban sprawl**. The types of interventions therefore need to be tailored to the specific context in each location. In an effort to inform programme approaches, using wider qualitative and market assessment tools such as EMMA and PASSA can give a multi-sectoral understanding of the different cultural, economic and social dynamics that impact on the lives of the population. Using these tools to better read the context in the Emergency Phase, and then again as the programming transitions from Emergency to Recovery, can help to track the rapidly changing factors that influence the pace of reconstruction. As a result, the trainings that were provided and the construction approaches promoted can link directly to the context and the existing practices and choices of the beneficiaries. Such tools can also assist in a prediction of what the trends in material use and construction practices could be in the future.

#### Community level

Seasonal activity mapping at community level can bring to light information that plots when people habitually or traditionally make changes to their homes or environments. Annually, activities revolve around harvest and periods of time when people have more access to money. Certain times of year are not suited to construction activities due to the

weather or the availability of labor and materials. Community-level participatory activities help create a picture of collective fears and concerns, such as the perception of risk, and sometimes the origin of these concerns.

#### Household level

At household level, especially for the most vulnerable, it is important to have a clear understanding of a family's capacity for recovery when working with them to reach a suitable emergency shelter solution. Emergency interventions have the potential to be the first incremental step towards recovery and longer-term development, and need to be carefully linked to an attainable recovery pathway. Types of on-going support should sustain families' efforts to recover and also be flexible to change. This requires a deep understanding of their access to resources, social standing, possible external support (family/diaspora), livelihoods opportunities and household expenditures.

**Recommendation:** A detailed reading of the context at regional, settlement and household level increases the breadth of information and knowledge used for decision-making and programme design. This analysis and diagnosis needs to be updated and monitored over time. A fluid diagnosis and forward-looking hypothesis also allows a strategic approach to programming that responds to the changing needs.

#### 5.1.4 Adapting approaches to context

Shelter responses that focus on one solution type such as T-Shelters, risk not being flexible enough to adapt to the changing needs or trends of a community. Repairs and retrofitting can offer appropriate support to families that wish to retain traditional housing, however funding needs to be flexible enough to accommodate some unforeseen costs.

Added trainings and community awareness offers flexibility in terms of reaching a wider audience with DRR Shelter messages, and technical best practice. However, the diversity of communities, socially and physically, calls for a 'menu of options' (Fan, 2012) as one size does not fit all. Repairs and reconstruction of existing structures can be a valuable response to explore, but will have to be carefully budgeted to accommodate possible unforeseen structural costs. Core timber T-Shelter frames have potential in areas where other structural materials are hard to come by and the timber frame is in keeping with the traditional timber construction approaches. Yet the frame is not always amenable to upgrade using locally sourced popular materials. Image 'd' in Part 7 (refer to end of report) shows a house with *clissage* cladding and a removed piece of cross bracing.

In Medair's case, Shelter interventions were implemented in the rural highlands, the rural lowlands and in peri-urban areas. **For longer term programming it is important to understand economic opportunities in different geographic areas;** additionally, different levels of access to construction materials and types and prices of materials will impact on project outcomes. In certain cases, the structure of the T-Shelters are not best suited to the construction practices used, or starting to be used in the immediate vicinity (See image 'i' in Part 7 for examples of block construction).

However poorly-built timber structure is often safer in an earthquake than a poorly-built concrete block structure. NGOs need to decide what message they want to send to communities by promoting certain methods and not others; Medair decided it was too early (in 2010/11) to promote confined masonry when, according to UN-Habitat, the quality of concrete blocks was too

variable and people were still unlikely to buy the more expensive good quality blocks and ensure that workmanship was adequate.

**Recommendation:** A more precise, clearer understanding of these changing dynamics could result in a more nuanced response to emergency shelter provision that considers a wider range of support methods.

**Recommendation:** Funding options for programming will need to reflect the diversity of approaches and the different lengths of activities. Incremental funding from one year to the next can make it difficult to plan programmes that produce outcomes with longevity.

#### 5.1.5 Flexibility of shelter interventions

##### Shelter options

Having this more nuanced, flexible approach could facilitate different recovery options for families in different scenarios. A careful consideration of who will benefit from technical trainings and how, is also essential. T-Shelters serve the purpose of sheltering people in the medium term, as they recover from the impact of a disaster. Additional support needs to carefully consider how they will continue to recover. Perhaps the upgrading of T-Shelters is not the best solution in the long-term. Repairs and reconstruction of existing structures should be a carefully considered alternative. The levels of strength and safety that are achievable through repairs and retrofitting should be carefully monitored but also refer to the level of acceptable of risk in the community. T-Shelters can provide time for families to transition to the point where they can see how to recover and start making decisions towards longer-term solutions.

By only providing support for T-Shelter upgrading to the vulnerable families that have not shown signs of being able to

upgrade, those families that have upgraded and are now potentially in vulnerable financial situations, could be overlooked. **Selection criterion for support that prioritizes ‘no signs of adaptation to the shelter’ could deter families from upgrading shelters themselves rather than encouraging them.** T-Shelters are intended to help people transition out of vulnerable situations, but there is a risk people stay at the same level of vulnerability or increase it.

T-Shelters that require large investments to make them more permanent could compound a state of vulnerability if the shelter intervention is not part of a more integrated approach. Household interviews revealed the measures families took to replace tarpaulins with more permanent materials, such as loans, and the selling of livestock (Annex 8.4)

**Recommendation:** When targeting a wide range of different beneficiaries, support needs to be given in a bespoke manner; the different plans and aspirations of the individual as well as the community need to be taken into consideration.

**Recommendation:** Any improvements or alterations to T-Shelters should be harnessed and encouraged, rather than acting as a factor for offering no support to families.

#### 5.1.6 Inevitability of the recovery process

Construction markets are never static. The construction trend in Haiti is moving towards confined masonry construction. Block structures built pre-earthquake did not stand up to the seismic movements. However, training on the manufacture of quality blocks in 2013 has started to increase the quality of these buildings, if they are constructed well. In comparison to traditional methods, confined masonry homes are observed by communities to

fare well in cyclones. Progress will mean that more of the T-Shelters, especially in peri-urban areas may be upgraded using blocks. The risk of promoting only one method of construction (the model upgrade/house) rather than promoting wider best practice messages that are adaptable, risks losing the interest of those beneficiaries that cannot meet agency standards, or want to use a different material or construction method. T-Shelters may not be upgraded at all as the families have different needs and routes to recovery.

**Recommendation:** Programs should recognize that people may move on from living in the T-Shelter to a different option of sheltering. Recognizing this as a valid action that should be supported by on-going programme activities is important. Moving on from T-Shelters is a clear sign of recovery and should continue to be encouraged.

#### 5.1.7 DRR Messaging, Communications and Training

There are subtleties and differences between the capacities and desires of those that need to improve their existing homes, those that may want to upgrade their T-Shelters and those that can rebuild their homes entirely. DRR messaging and trainings need to be flexible enough to cater for these varying situations. This may be through developing only a few key messages that can be applied in any scenario and are simple enough to be understood and applied in a way relevant to different beneficiaries and achievable within their existing capacity.

The present discourse in the shelter sector looks towards a systematic sector-wide approach to communicating and instigating a change in practice. This would be through an approach to 'DDR promotion' that is not a series of short-lived trainings and construction posters. The sector needs a framework to enable a

deep understanding of what prevents and enables safe building in each context. As Newby (2014) explains, this needs to be a long-term programme of teaching, of supporting self-building and persuading homeowners and contractors alike of the validity of the DRR messages, DRR messages that need to be tied directly into the local social context and culture of construction. (Resilient.Urbanism.org, November 2014)

**Recommendation:** When developing messaging and distribution methods for a range of different beneficiaries, in different conditions, with multiple desired outcomes, it is important that agencies develop a clear strategy for each specific beneficiary group, which is linked directly to the needs of the families and communities who are to eventually benefit from the changes in practice.

**Recommendation:** Longer term strategic planning for recovery programmes can be difficult without clear ideas of available funding and the number of possible phases of a programme. Donors and implementing partners should make efforts to maintain clear communication with beneficiaries during program planning phases when project implementation may not yet be active but there is still presence and visibility of the implementing actor

## 5.2 Conclusion for Question 2

For each area at risk of disasters some key information about construction practices, markets and social and cultural practices needs to be understood. In Haiti, there is a potential to harness existing momentum from the participatory activities and develop with families, masons and carpenters small incremental steps to strengthening houses that are context-specific. If the model houses prove unattainable for the majority of beneficiaries then there are a series of common, accepted steps that are used in communities, which can be built on and improved.

### Areas for further research

The specific details of these techniques need to be explored, recorded and tested by local technicians and engineers. At programmatic level, more investigation is required into how Shelter DRR programmes can take on a more integrated approach which addresses livelihoods and other needs that are closely tied to the capacities of beneficiaries to achieve their chosen shelter solution.



## Conclusion

Shelter interventions that are intended to jump-start an incremental approach to permanent and safer construction should be sufficiently flexible and nuanced to reach beneficiary families with different resources and capacities. This requires targeted, tailored messaging and support packages. Flexibility is needed within programming and funding cycles to support the different recovery choices, such as material decisions or different timings of implementation. It is important to ask the question: can humanitarian actors legitimately create or build-in triggers that push people to make choices about their housing? Can humanitarian actors take responsibility for the impact that they may have on a family's resilience in other aspects of their lives – for example their ability to send their children to school? Removing barriers to upgrading, through supporting livelihoods for example, can facilitate a change but these are often hard to achieve as the barriers originate from systemic problems in a given context, such as poverty or economic and environmental challenges. **The triggers and barriers involved in people's decision making are largely driven by external events.** Actors intervening in post-disaster contexts have an opportunity to put the knowledge and learning opportunities in place to facilitate and inform improvements in practice. However, the humanitarian community needs to examine its own motivations to instigate change, encouraging the affected beneficiary community itself to be the catalyst, and support their plans, choices and aspirations.

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## 7. Documentation



a) Upgraded T-Shelter in Bellevue, learning from the Medair techniques.



b) Traditional methods in Côtes de Fer, stone and mortar, and la tiff (limestone render)



c) Example of interior wall constructed without reinforcement



d) Clissage decaying and render cracking





e) Burning technique for treating posts



f) Loose post - attacked by termites



g) Interior stone and cement construction without cross bracing

h) Exterior stone and cement construction, in-between local irregular wood posts



i) T-Shelters Upgraded in cement blocks.



## Community Activities and Interviews



j) Seasonal Calendar and Priorities



k) Bas cap Rouge and Côtes-de-fer



l) Household interviews



## **8. Annexes**

**8.1.Web of institutionalization**

**8.2.Field Trip Schedule/Plan**

**8.3.Example Interview Questions**

**8.4.Interview Table**

**8.5.Interview with Project Manager**

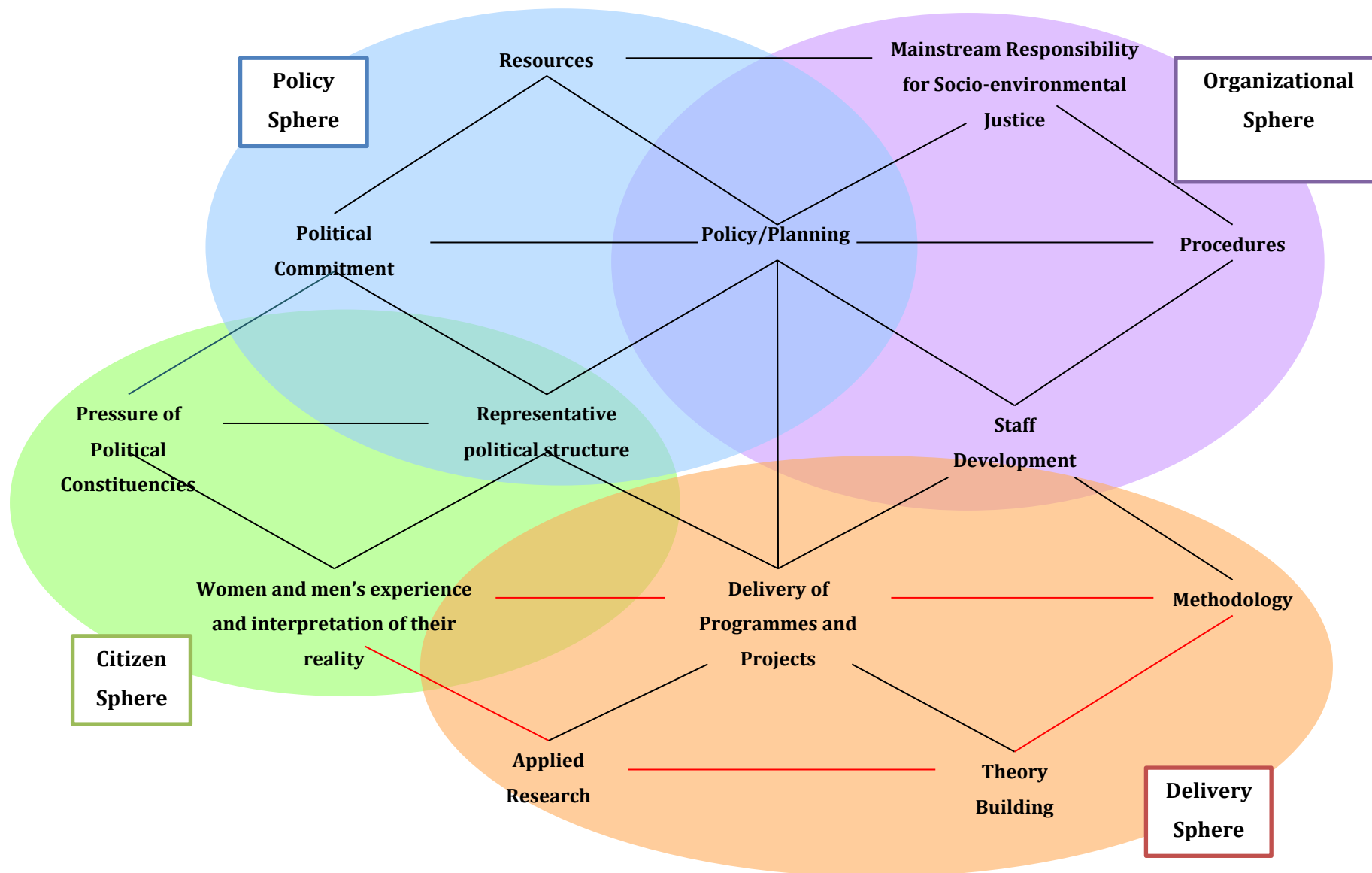
**8.6.Calendar of community activities**

**8.7.Shelter Types and Costs**

**8.8.Focus group discussion**

**8.9.Schedule of Medair's interventions in Haiti 2010 – 2014**

**8.1 The Web of Institutionalization – Changing Approaches (Levy, 2000):** Research route shown in Red.



## 8.2 Field Trip Schedule

### Day 1-2 Port-au-Prince

- Arrived in country
- Completed orientation and briefing with Melanie Geiser, Medair Haiti Country Director (CD)
- Meeting with Build Change CD (Noll Tufani) and Oxfam reconstruction specialist (Agathe Nougaret)
- Explore hypotheses/assumptions

### Day 3

- Meeting with Ben Noble of Internews
- Travel to Jacmel

### Day 5-6 La Montagne

- Completion of methodology, and distributed to Medair HQ/OFDA
- Initial visits to programme sites, interviews with the recently trained masons
- House to house visits to test interview questions
- Interview of Shelter Project Manager - Katie Kinstedt

### Day 7-8 La Montagne

- Presentation to Medair Shelter team
- Field visit to La port – Peri-urban area between Jacmel and La Montagne
- Meeting in the field with Phillip Petit, director of Planète Urgence (PU)
- Visit to Bas Cap Rouge, including group activities and house-to-house interviews

### Day 9-10 Bellevue/Terre Rouge

- Further field visits in La Montagne – Bellevue, house-to-house interviews
- House-to-house visits in Terre Rouge including meeting with the Casec
- Travel to C d F

### Day 11-12 Côtes de Fer

- Fieldwork in C d F – 6th -Jamais Vu, low land and high land
- Interviews with Head Community Mobiliser for the Shelter projects in C d F and Jacmel
- House visits of core structure beneficiaries– 5th Boucan Belier – high land and remote.
- Recording information gathered to date.

### Day 13-15 Return to Jacmel

- Return to Jacmel from C d F
- Record information retrieved in C d F
- Finalise mid consultancy report and invoice

### Day 16-21 Field visits

- Re-visit Bas Cap Rouge
- Focus Group La Montagne
- Visit to block-makers
- Meeting with GOAL (Marie Anne Lespinasses) and USAID (Angelica Fleischer) in PaP
- End of research period.

### 8.3 Example Interview Questions

#### Questions for exploration in semi-structured HH interviews

The questions will be used to guide the conversation. Observational skills will also be used to inform the narrative which evolves from the discussion (such as information on Head of the Household (HoH), Male/Female etc.)

##### Base questions for all:

Who lives here? Who is the HoH?  
How do you earn money?  
How long have you live here?  
How were you affected post-EQ, post-Hurricane?  
Other assets damaged?  
Livelihoods affected?

##### For those that have upgraded:

###### House Construction:

1. When did you make the changes?
2. Why did you choose the techniques that you have used?
3. Who initiated the changes? Did you ask anyone for advice?
4. Did you use a local mason or did someone from the family carry out the work?

###### Questions to find answers to through indirect discussion:

5. Does the frame of the T-Shelters offer flexibility in extensions/ alterations relating to family size and activities?
6. Does the family prioritize hurricane-resilient upgrades over earthquake-resilient construction?
7. Discuss different construction techniques – wattle and daub (clissage), loose masonry infill, masonry and mortar, block construction – and the preferences/pros and cons of each.
8. Did you have to make a trade-off / de-prioritize another cost to allow the construction to go ahead?

##### For those that have not upgraded:

1. Basic discussion about future plans and intentions regarding the T-Shelter.
2. Is there something specific they are waiting for to start upgrading?
3. Explore other priorities in their life
4. Are they at risk of EQ or Hurricane damage in this given location? – Perception of risk.

###### Questions to find answers to through indirect discussion:

5. Does the frame of the T-Shelters offer flexibility in extensions/alterations relating to family size and activities?
6. Does the family prioritize hurricane-resilient upgrades over earthquake-resilient construction?
7. Discuss different construction techniques – wattle and daub (clissage), loose masonry infill, masonry and mortar, block construction – and the preferences/pros and cons of each.



#### 8.4 Interview Table (Extract – See full Table)

	HoH	Location				House		
No.	Name	Commune	Section Rurale	Village	Urban/ Peri-Urban or Rural	House type	Previous Shelter Type	If T-Shelter still occupied?
1	FRANSIK, Adelia	Jacmel	La Montagne	Bellevue	Rural	Traditional Rock & LaChoux	Same house	N/A
2	ANTOINE (Nadia)	Jacmel	Jacmel	La Port	Peri Urban	Mix - T-Shelter and Ferrous cement	Traditional House, then T-Shelter	Yes
3	MENTOR, Jean Baptiste	Jacmel	Jacmel	La Port	Peri Urban	T-Shelter	Traditional House	Yes
4	Planète Urgence beneficiary	Jacmel	Jacmel	La Port	Peri Urban	New house in - construction next to the T-Shelter	T-Shelter	No
5	Couple upgraded in Blocks	Jacmel	Bas Cap Rouge	Zone 5	Peri - Urban towards rural	Concrete Blocks and T-Shelter mix	Traditional House then moved to another piece of land - with T-Shelter	Yes

## 8.5 Interview with Project Manager

### Notes from Conversation with Shelter/WASH Manager – Katie Kinstedt – 24<sup>th</sup> October 2014

#### **Trainings**

AR: *Once trained, the masons don't necessarily then work in the area, so it is hard to judge the impact of the trainings if we visit the local environs and look around. How can you be sure the masons and carpenters are the ones that need the training? People in Haiti are used to do house upgrades themselves...there is still a tendency to think it doesn't require a trained person to carry out the works. Therefore would it provide a larger impact to train Homeowners?*

KK: PASSA is starting to address the wider community in DRR Shelter awareness.

AR: *The conditions of the floor in the T-Shelters – the floor has degraded 3-4 years later. This is providing one reason why people are not confident to upgrade their T-Shelters.*

KK: The floors and foundations were only ever meant to last 5 years, so in terms of making a house more permanent the floor/foundation also needs upgrading. This is quite a significant upgrade that is required. The present foundation is not sufficient for a blockhouse for example, but upgrading the foundation is part of the T-Shelter upgrades that are done by Medair.

AR: *(But is this feasible for people to afford on their own?)*

AR: *Should the sensitization and the best practice focus on the homeowners rather than the masons/carpenters?*

KK: There is specific messaging for homeowners and the targeting of these messages is very important. Medair have 3 categories of people that they are trying to reach:

1. People in a T-shelter that has not been upgraded
  2. Homeowners who do have the capacity/resources to build a new house and replace their T-Shelter
  3. Those homeowners that can make improvement to existing houses/ T-Shelters but no more
- Targeting the messages to the right beneficiaries proves to be a little difficult. Especially targeting those that have the capacity to upgrade or build a new home.

AR: *The model house (used in technical and DRR trainings) is a finished product which is presently far out of reach of many people in the targeted communities. What are your thoughts on the use of the model house as part of the PASSA trainings?*

KK: The model house is overpriced as it is, it is not attainable for a family to raise \$3000 – it may be possible to reduce the price to \$2000 could get it down to that. People feel that if they can't do everything then they can't do anything, they are a little overwhelmed by the model homes.

AR: Perhaps there needs to be new approach in-terms of making sure that the model house is presented in an 'element by element' basis, or an incremental approach to improving an existing house. Can it be used to show beneficiaries about joints for example, or just learn about ties, or walling etc.? By reducing the model house down into small bite sized lessons for homeowners, there may be more uptake of the knowledge. If these smaller lessons can then link it back to PASSA this would strengthen both approaches. PASSA in Fort Ogé discussed remedial steps that can be taken for people to improve the house they are in at the moment; it promotes small steps that can be taken to make the existing structure safe in the meantime before families have the resources to build a new and safer house. Suggestions: Roaming carpenters...to make remedial changes.

AR: *You mentioned that targeting the messages to the right beneficiaries had been a challenge can you expand on that? Could some families have benefited more from repairs?*

KK: In the approach to Shelter repairs it was very difficult for Medair to guarantee that they could meet the standards of safety required (by the donors?) Medair could take the quality/safety of the house from 30% to 80% but can't get it to 90% - needs lots of engineers, and the cost of repairs and the extent to which the house needed repairing required time and expense on a level with building a completely new house.

KK: Did the masons mention the tools that they are provided with following the training. Are they able to complete the task with these tools? How do they manage with the tools that they are given... tools that are valued at \$10 now and then they go to \$30.

AR: They didn't mention that as a barrier.

**END**

## 8.6 Calendar of seasonal community activities in Côtes-de-Fer - Vila 6 section

[illegible]

## 8.7 Shelter Types and Costs

### Type 1 – Transitional Shelters

#### A. Not upgraded



Cost: US \$

Material	Labour	Transport	Total
1,347	200	50	1597

#### B. T-Shelter upgraded by Medair



Cost – original price (\$1,597) + upgrade = costs of around \$1,200 = \$2,800

#### C. Upgraded by beneficiaries

##### C1. In concrete blocks



Concrete blocks are 35 gourdes (\$0.80) each with transport costs. The T-Shelter structure requires in the area of 500 blocks, \$400. For sand and cement an extra \$100. With labor often provided by family or friends and sand and cement being relatively cheap then without render the block construction totaled at approximately \$500.

##### C2. In rocks and cement with render



Image: Beneficiary self-upgrade in stone and cement with some cross-bracing imitated from Medair model house

When constructed incrementally it can be very difficult to calculate costs. This particular family sourced the stones locally, bought some structural timber by selling livestock (\$20), and paid for the labor by providing accommodation and food to the carpenter and boss mason. On average the costs – due to informal goods exchanges do not often exceed 10,000-15,000 gourdes or \$300 -\$500 dollars.

##### C3. In Plywood

The rent for the land is 10,000 gourdes (\$330 US). The owner took a loan of a similar sum to complete the upgrade of this T-shelter.





## 8.8 Focus group discussion

### Terre Rouge – Tuesday 28<sup>th</sup> October

How has construction changed in the last 10 years?

#### Changing traditions

There has been a decrease in the use of traditional methods such as La Choux and Glissade and other methods in recent years. Comments from the Mason: The lime render that is often used does not necessarily protect the wood from rotting as the damp comes up from below. I think it is a durable solution, but not sustainable as the use of palm wood is now an issue. There has been reduction in the amount of palm trees available, as they have slowly become a commodity. They were kept before because they provided food for the pigs. The practice of keeping pigs is slowing, partly because of disease that occurs annually, and the cost of medication to keep the stock healthy. But even so they feel that the glissade/palm technique is not strong enough in the face of cyclones. Rock is better, if they are used correctly. They remember that cyclone Flora was particularly bad in 1963 and Allen in 1980. The houses didn't withstand the damage incurred. Then people started to build in rocks as they saw that is was more durable. Durability and therefore safety against cyclones is a large priority. There was also a consensus that stone/cement was more durable for an earthquake as well (as long as it is constructed well). Glissade and other traditional methods are a generational knowledge that is being forgotten, the grandparents' generation used it regularly, and each person maintained their own house. The traditional method did not require a mason/ professional; it was a common general skill.

#### Materials

The ability to source good/cheap materials can differ from Household to Household. Some people may be able to find materials in the vicinity of their home, or on their land

itself. Rocks from the mountain areas or river stones are used in construction. The owners of the land where trees or stones are sourced are often reimbursed. Some of these need to be sourced, and people will pay labor to go and collect them. But in the La Montagne area it is now frowned upon to cut down the trees. The Casec has to be informed if a tree is to be cut down, and he will allow or disallow it. If people do it without his permission this is seen as a serious insult/problem.

#### Blocks

Blocks are seen as the modern way to move forward with construction. Blocks range from 20-30 gourdes plus 5 gourdes per block for transport. The masons in the areas are more and more likely to have worked for an NGO, trained or worked with someone who has been trained on safer construction methods with blocks. So the knowledge is there/within the communities.

## 8.9 Schedule of Medair's interventions in Haiti 2010 – 2014

PROJECT REF.	LOCATION	PERIOD	DESCRIPTION	COMMENTS
HTI 101	Jacmel	Jan 2010 – Jan 2012	USAID/ OFDA-funded (USD 8.5M) integrated shelter programme of 2429 timber-frame transitional shelters with CGI roofs + plastic sheeting walls/ 511 'transitional tents'/ 123 repairs/ 51 permanent houses	The repair element of the shelter programme was initially more ambitious, but scaled down once the true state of existing houses 'behind the plaster' became known; IOM upgraded 335 proprietary metal-framed T tents to houses
HTI 102	Côtes-de-Fer	1 Feb 2011 - 31 Mar 2013	Swiss Solidarity (SwS)-funded 250 timber-frame permanent houses with stone infill and 123 repairs, all with rainwater harvesting tanks and latrines; CATS 'triggerings' to 150 targeted communities, 775 latrines dug as a result	Groupe URD were commissioned by the donor to carry out 6-9 monthly participatory evaluations. Summary of CATS process submitted to HAP as example of beneficiary accountability.
HTI 103	Jacmel	1 Mar 2012 - 31 Jan 2013	SwS-funded upgrades of 253 OFDA-funded T-shelters to permanent houses, plus 20 more 'owner-driven' upgrades; training of 800 community members in earthquake-/ hurricane-resilient building techniques	The 20 OD upgrades were a pilot project that showed that some HH in targeted communities had gained sufficient knowledge after 3 years to manage their own building work, with technical assistance from Medair
HTI 104	Jacmel		SwS-funded training centre	A 'side project' requested by SwS
HTI 106	Côtes-de-Fer	1 Jan 2013 – 30 Jun 2013	OFDA-funded response to tropical storm Isaac/ Hurricane Sandy: 15 T-shelters, 40 roof + structural support only (infill walls by household), 145 homeowner-driven repairs, training	Due to donor requirements for max. coverage using available funds, Medair provided CGI roofs on new timber structures alongside T-shelters for the most vulnerable HH, tools for more able HH
HTI 108	Côtes-de-Fer	1 Jan 2013 - 30 Sep 2013	SwS-funded Emergency Food Assistance/ DRR programme for 1350 beneficiaries involving natural resource management projects (12 springs protected, 47km of roads, check dams etc.)	Internal report on lessons learned available
HTI 109	Côtes-de-Fer	1 Apr 2013 - 31 Jul 2014	SwS-funded extension of HTI 102: 201 OFDA T-shelter upgrades, 52 builders trained in DRR construction, 1198 people plus 26 schools reached with awareness-raising activities	Recently completed project
HTI 112	Jacmel	1 Feb 2013 - 31 Jan 2014	SwS-funded extension of HTI 103: upgrades of 250 OFDA-funded T-shelters to permanent houses (90 by Medair, 160 owner-driven); training of builders	<i>Note: Final numbers to be verified</i>
HTI 115	Jacmel	1 May 2014 - 30 Apr 2015	OFDA-/SwS-funded training of 1260 people and the upgrading of 40 OFDA T-shelters; research study re. triggers + barriers to housing construction/ repair	Project currently in progress

